Appendix F

Summary of Dredged Sediment Quality Characteristics

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Appendix F – Summary of Dredged Sediment Quality Characteristics

This section presents an evaluation of dredged sediment quality characteristics. The discussion is organized by the purposes of the data, which are to aid in determining:

- water quality impacts during dredging (dredged sediment elutriate characteristics);
- sediment quality characteristics impacting onsite disposal; and
- sediment quality characteristics impacting offsite disposal in a subtitle D landfill.

These data were initially presented in the Terminal 4 Early Action Characterization Report (BBL, 2004a), which also discusses data quality, except for the thin-column leaching test (TCLT) data, which are presented here for the first time. Certain summations were calculated to obtain total values for the sediment, leachate, and elutriate data. Appendix E describes how total values were calculated. The CD included with Attachment F-1 contains laboratory results and the associated data validation report.

F.1 Dredged Sediment Elutriate Characteristics

Dredging elutriate tests (DRET) were performed to determine potential water quality impacts during dredging. The DRET simulates the release of sediment-bound and porewater constituents into the receiving water column at the point of dredging. The DRETs were performed in accordance with *Dredging Elutriate Test (DRET) Development* (DiGiano et al., 1995). Two DRETs were performed, one (T4-CM1-DRET) on composite sediment sample T4-CM1 from Berth 401 and Slip 1 using surface water from Slip 1 (T4-CM1) and one (T4-CM2-DRET) on composite sediment sample T4-CM2 from Wheeler Bay, Slip 3, and north of Berth 414 using surface water from Slip 3 (T4-CM2).

Composite sediment samples and surface water were submitted to Soil Technology of Bainbridge Island, Washington for the DRET analysis. Using the sediment and surface water provided, a slurry with a 1:250 solids-to-water volume ratio (solids concentration of 10 grams per liter) was produced. The slurry was thoroughly mixed in a carboy by hand shaking. Next, the slurry was aerated for one hour using compressed air through a bubble trap. The slurry then settled for one hour. Figure F-1 illustrates this test.

After settling, supernatant water samples were extracted from the midpoint between the fluid surface and the settling interface. The extract was centrifuged to obtain dissolved samples. The DRET elutriate samples were then submitted to Columbia Analytical Services (CAS) of Kelso, Washington for analysis of:

- Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc);
- Semivolatile organic volatiles (SVOCs);
- Σ Dichlorodiphenyltrichloroethane (DDT);
- Polychlorinated biphenyls (PCBs);
- Total petroleum hydrocarbon (TPH) diesel-range organics and residual-range organics;
- Ammonia;

- Total sulfide; and
- Total suspended solids (TSS).

The DRET chemistry results are presented in Table F-1. Chemistry results of surface water used in the DRET are presented in Table F-2.

F.1.1 T4-CM1-DRET Results

Six of the ten metals for which the sample was analyzed were detected in the T4-CM1-DRET elutriate sample. Those six metals are arsenic, chromium, copper, lead, nickel, and zinc. Cadmium, mercury, selenium, and silver were not detected.

Pyrene was the only polycyclic aromatic hydrocarbons (PAH) detected in the T4-CM1-DRET elutriate sample. The remaining 23 PAHs for which the sample was analyzed were not detected. The total detected PAH concentration was 0.075 micrograms per liter (µg/L) in the elutriate sample. The six phthalates for which the elutriate sample was analyzed were not detected.

The six DDT compounds and nine PCBs for which the elutriate sample was analyzed were not detected.

Diesel-range TPH was not detected in the T4-CM1-DRET elutriate sample. Residual-range TPH was detected in the elutriate sample.

TSS and total sulfide were not detected in the T4-CM1-DRET elutriate sample. Ammonia was detected in the T4-CM1-DRET elutriate.

The DRET data were used in the evaluation of the feasibility of a confined disposal facility (CDF), which is presented in Appendix I.

F.1.2 T4-CM2-DRET Results

Eight of the ten metals for which the sample was analyzed were detected in the T4-CM2-DRET elutriate sample. Those eight metals are arsenic, chromium, copper, lead, nickel, selenium, silver, and zinc. Cadmium and mercury were not detected.

Seven PAHs (acenaphthylene, acenaphthene, 2,3,5-trimethylnaphthalene, fluorene, phenanthrene, fluoranthene, and pyrene) of the 24 PAHs for which the sample was analyzed were detected in the T4-CM2-DRET elutriate sample. The total detected PAH concentration was 0.737 µg/L in the elutriate sample. The six phthalates for which the elutriate sample was analyzed were not detected.

The six DDT compounds and nine PCBs for which the elutriate sample was analyzed were not detected.

Diesel-range TPH and residual-range TPH were not detected in the T4-CM2-DRET elutriate sample.

TSS and total sulfide were not detected in the T4-CM12-DRET elutriate sample. Ammonia was detected in the sample.

The DRET data were used in the evaluation of the feasibility of a CDF, which is presented in Appendix I.

F.2 Characteristics Related to Onsite Disposal

This section presents a summary of sediment characteristics related to on-site disposal, including short-term water quality impacts and long-term water quality impacts. Short-term water quality impacts were evaluated with:

- Column settling test (CST); and
- Modified elutriate test (MET).

Long-term water quality impacts were evaluated with the TCLT.

F.2.1 CST

Onsite disposal in a CDF is assessed with the CST. The CST provides information on the settling characteristics of dredged material in a containment area. The CST was performed in accordance with protocols outlined in USACE (1987). Composite sediment sample (T4-CM2) from Wheeler Bay, Slip 3, and north of Berth 414 and surface water from Slip 3 (T4-CM2) were used for the CST.

Composite sediment sample and surface water were submitted to Soil Technology for the CST analysis. To begin the CST, a slurry was produced using the composite sediment sample and surface water from Slip 3; the slurry had a water-to-sediment ratio of 4:1 by volume. This ratio was based on the expected water-to-sediment ratio of dredged material at the Removal Action Area. The slurry was thoroughly mixed with a mechanized mixer and then pumped into the test column. The test column is an 8-foot-tall plastic column with a diameter of approximately 8 inches. The test column has sample ports at 1-foot or closer intervals in the lower 3 feet of the column and at 0.5-foot intervals in the upper 3 feet of the column. The sampling ports sample from the center of the column. To produce a uniform concentration of suspended solids, compressed air is injected at the base of the column during this step. The first sample was taken after the fluid surface, or the zone settling interface, was below the highest port. Samples were collected from all sampling ports above the settling interface. Subsequent samples were taken from any ports above the interface at 2, 4, 6, 12, 24, 48, 96, 144, 216, 288, and 360 hours. The time of extraction, sampling port height, and height of the interface were recorded for each sample. Samples were analyzed for TSS by Soil Technology. See Figure F-2 for an illustration of this test.

Table F-3 provides the settlement settling data results (suspended solids and turbidity concentrations) versus elapsed time. The slurry used in the CST exhibited zone settling behavior; therefore, these data are also tabulated by providing the interface height as a function of time. Additional CST results may be referenced in the Terminal 4 Early Action Characterization Report (BBL, 2004a).

The settling velocity for zone settling behavior is obtained from the slope of the straight-line segment of interface height versus time in hours. The velocity between individual sampling points varied considerably,

with an average settling velocity of approximately ½ foot per hour for the first 12 hours of the test. The CST data were used in the evaluation of the feasibility of a CDF, which is presented in Appendix K.

F.2.2 MET

The MET provides information for assessing onsite disposal in a CDF. The MET simulates dissolved and particulate associated concentrations of contaminants in the effluent from the CDF and was completed to evaluate short-term water quality impacts from a CDF. The MET was conducted following guidelines in Palermo (1985). Composite sediment sample (T4-CM2) from Wheeler Bay, Slip 3, and north of Berth 414 and surface water from Slip 3 (T4-CM2) were submitted to Soil Technology for the MET, and the resulting elutriate samples were submitted to CAS for analysis.

For the MET slurry, the water-to-sediment ratio was 4:1 based on volume. The slurry was mixed in a carboy by hand-shaking. The slurry was then aerated for one hour using compressed air through a bubble trap. The slurry settled for the anticipated field mean retention time of the dredge-material slurry in the CDF, up to a maximum of 24 hours. Figure F-3 illustrates this test.

After settling, supernatant water samples were extracted from the midpoint between the fluid surface and the settling interface. Samples were analyzed for total and dissolved fractions. The dissolved samples were obtained by centrifuging the extract. The MET elutriate samples were submitted to CAS for analysis for the following constituents:

- metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc);
- SVOCs;
- tDDT;
- PCBs; and
- TSS.

The MET chemistry results are presented in Table F-4.

Total MET Results

All ten metals for which the sample was analyzed were detected in the T4-CM2-MET-T elutriate sample.

Fifteen of the 24 PAHs for which the sample was analyzed were detected in the T4-CM2-MET-T elutriate sample. The total PAH concentration was 2.6 µg/L. The six phthalates for which the elutriate sample was analyzed were not detected.

All of the six DDT compounds for which the sample was analyzed were detected in the T4-CM2-MET-T elutriate sample. The Σ DDTs concentration was 0.0493 µg/L. Aroclor 1260 was the only Aroclor detected in the T4-CM2-MET-T elutriate sample. The remaining eight Aroclors for which the sample was analyzed were not detected. The total detected PCB concentration was 0.082 µg/L.

TSS was detected in the T4-CM2-MET-T elutriate sample.

The MET data were used in the evaluation of the feasibility of a CDF, which is presented in Appendix I.

Dissolved MET Results

Seven of the ten metals for which the sample was analyzed were detected in the T4-CM2-MET-D elutriate sample. Those seven metals are arsenic, chromium, copper, lead, nickel, silver, and zinc. Cadmium, mercury, and selenium were not detected in the elutriate sample.

Six of the 24 PAHs for which the sample was analyzed were detected in the T4-CM2-MET-D elutriate sample. The total detected PAH concentration was 0.92 µg/L in the elutriate sample. The six phthalates for which the sample was analyzed were not detected.

The only pesticide detected in the T4-CM2-MET-D elutriate sample was 4,4'-DDE. The remaining five DDT compounds for which the sample was analyzed were not detected. The Σ DDTs concentration was 0.0024 µg/L in the elutriate sample. The nine Aroclors for which the sample was analyzed were not detected.

TSS was not detected in the T4-CM2-MET-D elutriate sample.

The MET data were used in the evaluation of the feasibility of a CDF, which is presented in Appendix I.

F.2.3 TCLT

The TCLT was performed to determine potential long-term water quality impacts from the CDF. The TCLT acts as a laboratory-scale model of peak leachate contaminant concentrations from dredged material deposited in a CDF. The TCLT was performed in accordance with *Leachate Testing and Evaluation for Estuarine Sediments* (Myers et al., 1996). One composite sediment sample (T4-CM2) from Wheeler Bay, Slip 3, and north of berth 414 was submitted to Soil Technology for the anaerobic TCLT. The water (leachant) for the TCLT was deionized water. To perform the TCLT, a portion of the composite sample was mixed and weighed. The material was then placed into the thin-layer column. Leachant was pumped through the composite sediment sample. The resulting leachate was collected periodically and analyzed. Soil Technology's TCLT report is presented at the end of this appendix. Figure F-4 illustrates the thin-layer column leaching test.

The TCLT was performed for the collection of approximately 21 pore volumes. The TCLT leachate was submitted to CAS and analyzed for the following constituents:

- metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc);
- SVOCs;
- tDDT; and
- PCBs.

EcoChem of Seattle, Washington performed the data validation for the leachate samples. In accordance with the data validation requirements set forth in the Quality Assurance Project Plan of the EE/CA work plan (BBL,

2004a), both Level IV and Level III data validation were performed. Level IV data validation was performed on data package K2402978 for a total of two samples. Level III data validation was performed on the remaining samples. No leachate data were rejected as a result of the data validation. The complete data validation reports are presented at the end of this appendix. The leachate data, as qualified, are acceptable for use. The TCLT results are presented in Table F-5. Table F-6 presents pH, Eh, conductivity, and dissolved oxygen results that were measured by Soil Technology on each TCLT sample.

Nine of the ten metals for which the samples were analyzed were detected in at least one TCLT leachate sample. Those nine metals are arsenic, cadmium, chromium, copper, lead, nickel, selenium, silver, and zinc. Mercury was not detected in the TCLT leachate samples.

Thirteen of the 24 PAHs for which the samples were analyzed were detected in at least one TCLT leachate sample. Two of the six phthalates for which the TCLT leachate samples were analyzed were each detected once.

Two (4,4'-DDE and 2,4'-DDD) of the six DDT compounds were detected in at least one TCLT leachate sample. The nine PCBs for which the TCLT leachate samples were analyzed were not detected.

The TCLT data were used in the evaluation of the feasibility of a CDF, which is presented in Appendix I.

F.3 Characteristics Related to Offsite Disposal

This section presents the following data relevant to determining suitability for offsite disposal in a Subtitle D landfill:

- hazardous waste characteristics, including ignitability, corrosivity, reactivity, toxicity characteristics leaching procedure (TCLP), and "Oregon-only" hazardous waste criteria;
- data on the generation and loss of free liquid (paint filter test);
- a Toxics Substances Control Act (TSCA) determination; and
- additional landfill-specific acceptance criteria.

Two composite sediment samples (T4-CM1 and T4-CM2) were analyzed for hazardous waste characteristics and generation and loss of free liquid. Composite sample T4-CM1 consisted of the cores collected from Berth 401 and Slip 1. Composite sample T4-CM2 consisted of cores from Wheeler Bay, Slip 3, and north of Berth 414. Discrete surface, under-pier, and subsurface sediment samples were analyzed for PCBs and TPH. These data were used in the TSCA determination and landfill-specific acceptance determination.

F.3.1 Hazardous Waste Determination Results

Composite sediment sample T4-CM1 exhibited a flashpoint of greater than 200°F and a pH of 6.92. Total cyanide and reactive sulfide were not detected in T4-CM1. Composite sediment sample T4-CM2 exhibited a flashpoint of greater than 200°F and a pH of 7.01. Total cyanide and reactive sulfide were not detected in T4-CM2. Results are presented in Table F-7.

TCLP chemistry results are summarized in Table F-8. Three of the eight TCLP metals were detected in sample T4-CM1. The detected metals are barium, chromium, and silver. TCLP pesticides, herbicides, volatile organic compounds, and SVOCs were not detected in sample T4-CM1.

Of the eight TCLP metals, only barium was detected in sample T4-CM2. TCLP pesticides, herbicides, volatile organic compounds, and SVOCs were not detected in sample T4-CM2.

The two composite sediment samples did not display hazardous waste characteristics (ignitability, corrosivity, and reactivity). TCLP results were less than the maximum concentrations of contaminants for the toxicity characteristic (CFR 40.261.23), as presented in Table F-8.

The source of a contaminant is required to define a solid waste as an "Oregon–only" additional hazardous waste. Federal P and U-list constituents (e.g., commercial chemical products, off-specification species, container residues and spill residues found in 40 CFR 261.33 (e) and (f)) have not been documented as sources of contaminants at Terminal 4. Therefore, the 3% and 10 % rule for "Oregon-only" hazardous waste does not apply. (The 3% or greater applies to any substance or mixture listed in the federal P-list, and residues of these wastes. The 10 percent or greater applies to any substance or mixture in the federal U-list, and residues of these wastes). Mixtures of pesticides included in the federal P and U-list and mixtures of pesticides on the TCLP list and the P and U-list are **not** "Oregon-only" hazardous wastes. The detected pesticides, DDT and DDD, are both U-listed waste. Since the source of these pesticides is not documented, they are not U-listed wastes or "Oregon-only" hazardous wastes.

The source(s) of pesticides found in Terminal 4 sediment is not documented and therefore the sediment is not defined as a pesticide residue. If the sediment is not a pesticide residue it cannot be an "Oregon-only" hazardous waste.

F.3.2 Generation and Loss of Free Liquid Results

Composite sediment samples T4-CM1 and T4-CM2 both passed the paint filter test, indicating the dredged material would likely be acceptable for transport from Terminal 4 without any additional material processing. Most landfills in the area can accept material with free liquid. If a landfill is selected that cannot accept free liquid, the results of the paint filter test indicate the dredged sediment would be acceptable.

F.3.3 TSCA Determination Results

PCB results presented in Appendix E were used for the TSCA determination. PCB concentrations were below TSCA criteria. Based on the available data, the dredged sediment will not designate as federal TSCA waste. PCB concentrations are below typical landfill criteria.

F.3.4 Landfill-Specific Acceptance Criteria Results

TPH results presented in Appendix E were used for determining compliance with landfill-specific acceptance criteria. TPH concentrations are below typical landfill criteria.

F.4 References

Blasland, Bouck, & Lee, Inc. (BBL), 2004a. Characterization Report, Terminal 4 Early Action, Port of Portland, Portland, Oregon. September 17.

DiGiano, F. A., C. T. Miller, and J. Yoon, 1995. Dredging Elutriate Test (DRET) Development. Prepared for the U.S. Army Corps of Engineers, Waterways Experiment Station. Contract Report D 95-1. August.

Myers, T. E., J. M. Brannon, B. a. Tardy, and D. M. Townsend 1996. Leachate Testing and Evaluation for Estuarine Sediments. Prepared for the U.S. Army Corps of Engineers, Waterways Experiment Station. Technical Report D-96-1. March.

Palermo, M. R. 1985. Environmental Effects of Dredging, Technical Notes, Interim Guidance for Predicting Quality of Effluent discharged from Confined Dredged Material Disposal Areas—Test Procedures. Prepared for the U.S. Army Corps of Engineers, Waterways Experiment Station. EEDP-04-2. June.

U.S. Army Corps of Engineers (USACE), 1987. Confined Disposal of Dredged Material. EM 1110-2-5027. September 30.

Table F-1
DRET Elutriate Chemistry Results

Sample ID:	T4-CM1-Dret	T4-CM2-Dret
Lab ID:	K2402978-004	K2403382-001
Date Sampled:	04/20/2004	05/05/2004
Metals (ug/L)		
Arsenic	0.9	0.8
Cadmium	0.02 U	0.04 U
Chromium	1.11	1.77
Copper	5.08	4.25
Lead	1.63	1.86
Mercury	0.2 U	0.2 U
Nickel	1.3	1.65
Selenium	0.7 U	0.4 B
Silver	0.03 U	0.03
Zinc	5.62	6.7
Semivolatile Organics (ug/L)		
Naphthalene	0.40 U	0.39 U
2-Methylnaphthalene	0.40 U	0.39 U
1-Methylnaphthalene	0.40 U	0.39 U
Biphenyl	0.40 U	0.39 U
2,6-Dimethylnaphthalene	0.40 U	0.39 U
Acenaphthylene	0.40 U	0.099 J
Acenaphthene	0.40 U	0.19 J
2,3,5-Trimethylnaphthalene	0.40 U	0.027 J
Fluorene	0.40 U	0.096 J
Phenanthrene	0.40 U	0.13 J
Anthracene	0.40 U	0.39 U
1-Methylphenanthrene	0.40 U	0.39 U
Fluoranthene	0.40 U	0.092 J
Pyrene	0.075 J	0.13 J
Benz(a)anthracene	0.40 U	0.39 U
Chrysene	0.40 U	0.39 U
Benzo(b)fluoranthene	0.40 U	0.39 U
Benzo(k)fluoranthene	0.40 U	0.39 U
Benzo(e)pyrene	0.40 U	0.39 U
Benzo(a)pyrene	0.40 U	0.39 U
Perylene	0.40 U	0.39 U
Indeno(1,2,3-cd)pyrene	0.40 U	0.39 U
Dibenz(a,h)anthracene	0.40 U	0.39 U
Benzo(g,h,i)perylene	0.40 U	0.39 U
Dimethyl phthalate	9.9 U	9.6 UJ
Diethyl phthalate	9.9 U	9.6 U
Di-n-butyl phthalate	9.9 U	9.6 U
Butylbenzyl phthalate	9.9 U	9.6 U
Bis(2-ethylhexyl) phthalate	9.9 U	9.6 U
Di-n-octyl phthalate	9.9 U	9.6 U
Total PAHs (a,b)	0.075 J	0.737 J
Pesticides (ug/L)		
4,4'-DDE	0.099 U	0.097 U
4,4'-DDD	0.099 U	0.097 U
4,4'-DDT	0.099 U	0.097 U
2,4'-DDE	0.099 U	0.097 U
2,4'-DDD	0.099 U	0.097 U
2,4'-DDT	0.099 U	0.097 U
Total DDD (a,c)	0.099 U	0.097 U

Table F-1
DRET Elutriate Chemistry Results

Sample ID:	T4-CM1-Dret	T4-CM2-Dret
Lab ID:	K2402978-004	K2403382-001
Date Sampled:	04/20/2004	05/05/2004
Total DDE (a,d)	0.099 U	0.097 U
Total DDT (a,e)	0.099 U	0.097 U
ΣDDTs (a,f)	0.099 U	0.097 U
PCBs (ug/L)		
Aroclor 1016	0.099 U	0.097 U
Aroclor 1221	0.099 U	0.097 U
Aroclor 1232	0.099 U	0.097 U
Aroclor 1242	0.099 U	0.097 U
Aroclor 1248	0.099 U	0.097 U
Aroclor 1254	0.099 U	0.097 U
Aroclor 1260	0.099 U	0.097 U
Aroclor 1262	0.099 U	0.097 U
Aroclor 1268	0.099 U	0.097 U
Total PCBs (a,g)	0.099 U	0.097 U
Petroleum Hydrocarbons (ug/L)		
Diesel Range Organics (DRO)	250 U	250 U
Residual Range Organics (RRO)	57 J	500 U
Conventionals (mg/L)		
Total suspended solids	5 U	5 U
Ammonia as Nitrogen	0.57	0.68
Total Sulfide	0.05 U	0.05 U

U = Analyte was not detected above the reported sample quantitation limit.
J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.
B = Analyte was positvely identified; the associated numerical value is the approximate concentration of the analyte in the sample. The approximate concentration is less than the method report limit but greater than the method detection limit.
a. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
b. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
c. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
d. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
e. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
f. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes c, d, and e for the definitions of total DDD, total DDE, and total DDT, respectively.
g. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).

Table F-2
Surface Water Samples Chemistry Results

Sample ID:	T4-CM1	T4-CM2
Lab ID:	K2402162-001	K2402162-002
Date Sampled:	03/23/2004	03/23/2004
Metals (ug/L)		
Arsenic	0.3 B	0.4 B
Cadmium	0.02 U	0.007 B
Chromium	0.25	0.27
Copper	0.62	0.61
Lead	0.08	0.15
Mercury	0.2 U	0.2 U
Nickel	0.32	0.33
Selenium	1 U	1 U
Silver	0.02 U	0.014 U
Zinc	1.5	1.6
Semivolatile Organics (ug/L)		
Naphthalene	0.39 U	0.39 U
2-Methylnaphthalene	0.39 U	0.39 U
1-Methylnaphthalene	0.39 U	0.39 U
Biphenyl	0.39 U	0.39 U
2,6-Dimethylnaphthalene	0.39 U	0.39 U
Acenaphthylene	0.39 U	0.39 U
Acenaphthene	0.39 U	0.39 U
2,3,5-Trimethylnaphthalene	0.39 U	0.39 U
Fluorene	0.39 U	0.39 U
Phenanthrene	0.39 U	0.39 U
Anthracene	0.39 U	0.39 U
1-Methylphenanthrene	0.39 U	0.39 U
Fluoranthene	0.39 U	0.39 U
Pyrene	0.39 U	0.39 U
Benz(a)anthracene	0.39 U	0.39 U
Chrysene	0.39 U	0.39 U
Benzo(b)fluoranthene	0.39 U	0.39 U
Benzo(k)fluoranthene	0.39 U	0.39 U
Benzo(e)pyrene	0.39 U	0.39 U
Benzo(a)pyrene	0.39 U	0.39 U
Perylene	0.39 U	0.39 U
Indeno(1,2,3-cd)pyrene	0.39 U	0.39 U
Dibenz(a,h)anthracene	0.39 UJ	0.39 UJ
Benzo(g,h,i)perylene	0.39 U	0.39 U
Dimethyl phthalate	9.7 U	9.7 U

Table F-2
Surface Water Samples Chemistry Results

Sample ID:	T4-CM1	T4-CM2
Lab ID:	K2402162-001	K2402162-002
Date Sampled:	03/23/2004	03/23/2004
Diethyl phthalate	9.7 U	9.7 U
Di-n-butyl phthalate	9.7 UJ	9.7 UJ
Butylbenzyl phthalate	9.7 U	9.7 U
Bis(2-ethylhexyl) phthalate	9.7 U	9.7 U
Di-n-octyl phthalate	9.7 U	9.7 U
Total PAHs (a,b)	0.39 U	0.39 U
Pesticides (ug/L)		
4,4'-DDE	0.098 U	0.099 U
4,4'-DDD	0.0059 J	0.0066 J
4,4'-DDT	0.098 U	0.099 U
2,4'-DDE	0.098 U	0.0017 J
2,4'-DDD	0.098 U	0.099 U
2,4'-DDT	0.098 U	0.099 U
Total DDD (a,c)	0.0059 J	0.0066 J
Total DDE (a,d)	0.098 U	0.0017 J
Total DDT (a,e)	0.098 U	0.099 U
ΣDDT (a,f)	0.0059 J	0.0083 J
PCBs (ug/L)		
Aroclor 1016	0.098 U	0.099 U
Aroclor 1221	0.098 U	0.099 U
Aroclor 1232	0.098 U	0.099 U
Aroclor 1242	0.098 U	0.099 U
Aroclor 1248	0.098 U	0.099 U
Aroclor 1254	0.098 U	0.099 U
Aroclor 1260	0.098 U	0.099 U
Aroclor 1262	0.098 U	0.099 U
Aroclor 1268	0.098 U	0.099 U
Total PCBs (a,g)	0.098 U	0.099 U
Petroleum Hydrocarbons (ug/L)		
Diesel Range Organics (DRO)	260 U	250 U
Residual Range Organics (RRO)	520 U	500 U
Gasoline Range Organics (GRO)	50 UJ	50 UJ
Conventionals (mg/L)		

Table F-2
Surface Water Samples Chemistry Results

Sample ID:	T4-CM1	T4-CM2
Lab ID:	K2402162-001	K2402162-002
Date Sampled:	03/23/2004	03/23/2004
Total organic carbon	1.7 U	1.4 U
Total suspended solids	5 U	5 U
Ammonia as Nitrogen	0.07 U	0.04 U
Total Sulfide	0.004 J	0.005 U

U = Analyte was not detected above the reported sample quantitation limit
J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.
B = Analyte was positvely identified; the associated numerical value is the approximate concentration of the analyte in the sample. The approximate concentration is less than the method report limit but greater than the method detection limit.

a. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit
b. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene
c. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD
d. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE
e. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
f. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes c, d, and e for the definitions of total DDD, total DDE, and total DDT, respectively.
g. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268)

Table F-3
Column Settling Test Results

Elapsed Time in Hours	Port Height in Feet	Suspended Solids in g/L	Percent of Initial Concentration	Turbidity in NTU	Surface Water Height in Feet	Solids Interface Height in Feet
0					6.92	6.92
0.05					6.92	6.92
0.12					6.92	6.92
0.3					6.92	6.92
0.33					6.92	3.71
0.5					6.92	2.49
1	6.5	9.53	100	9130	6.92	1.56
1	6	9.52	100	9220		
1	5.5	9.54	100	9250		
1	5	9.63	100	9100		
1	4.5	9.55	100	9720		
1	4	9.54	100	9590		
1	3.5	9.69	100	9100		
1	3	9.70	100	9780		
1	2	9.71	100	9250		
2	6.5	7.57	78.82	7830	6.84	1.16
2	6	7.64	79.61	7840		
2	5.5	7.71	80.28	7820		
2	5	7.69	80.07	8210		
2	4.5	7.70	80.24	8030		
2	4	7.75	80.70	7820		
2	3.5	7.74	80.61	7760		
2	3	7.70	80.16	8030		
2	2	6.86	71.45	8230		
4	6.5	6.16	64.16	6600	6.76	1.08
4	6.5			6820		
4	6	6.39	66.57	6830		
4	6	6.32	65.87			
4	5.5	6.41	66.78	6920		
4	5	6.52	67.91	6820		
4	4.5	6.53	67.99	7200		
4	4	6.51	67.82	7070		
4	3.5	6.50	67.70	6900		
4	3	6.48	67.49	6870		
4	2	6.42	66.91	6830		
6	6.5	5.37	55.91	6270	6.68	1.03
6	6	5.86	61.08	6470		
6	5.5	5.95	61.99	6520		
6	5	6.00	62.53	6490		
6	4.5	5.98	62.28	6580		
6	4	6.07	63.20	6600		
6	3.5	6.06	63.08	6600		
6	3	6.02	62.66	6660		
6	2	6.07	63.24	6600		
6	2	6.10	63.49	6600		
12	6.5	4.04	42.08	4700	6.59	0.95
12	6	5.07	52.83	5880		
12	5.5	5.37	55.91	6230		

Table F-3
Column Settling Test Results

Elapsed Time in Hours	Port Height in Feet	Suspended Solids in g/L	Percent of Initial Concentration	Turbidity in NTU	Surface Water Height in Feet	Solids Interface Height in Feet
12	5	5.42	56.41	6090		
12	4.5	5.46	56.87	6100		
12	4	5.44	56.66	6070		
12	3.5	5.39	56.16	6160		
12	3	5.50	57.24	6160		
12	2	5.60	58.33	6250		
24	6.5	1.99	20.75	2160	6.5	0.89
24	6	4.39	45.74	5190		
24	5.5	4.74	49.37	5340		
24	5	4.94	51.41	5590		
24	4.5	4.96	51.70	5560		
24	4	5.06	52.74	5780		
24	4			5700		
24	3.5	5.12	53.33	5750		
24	3	5.05	52.58	5660		
24	2	5.01	52.16	5710		
24	1	5.10	53.08	5640		
24	1	5.10	53.08			
48	6	3.52	36.66	4090	6.4	0.84
48	5.5	4.10	42.70	4790		
48	5	4.35	45.33	4930		
48	4.5	4.47	46.54	5120		
48	4	4.59	47.79	5340		
48	3.5	4.64	48.29	5400		
48	3	4.69	48.87	5250		
48	2	4.80	49.99	5370		
48	1	4.87	50.70	5310		
96	6	2.80	29.16	3030	6.3	0.81
96	5.5	3.46	36.08	3920		
96	5	3.78	39.41	4320		
96	4.5	3.96	41.29	4410		
96	4	4.16	43.37	4650		
96	3.5	4.22	43.91	4680		
96	3	4.29	44.66	4730		
96	2	4.44	46.24	5040		
96	1	4.50	46.91	5050		
96	1	4.52	47.12	5050		
144	6	1.94	20.25	1990	6.18	0.81
144	5.5	2.91	30.29	3285		
144	5	3.22	33.58	3750		
144	4.5	3.44	35.87	3875		
144	4	3.62	37.74	4180		
144	3.5	3.70	38.54	4165		
144	3	3.78	39.37	4470		
144	2	3.99	41.54	4535		
144	1	4.22	43.91	4700		
216	6	0.92	9.62	1370	6.07	0.8
216	5.5	2.42	25.16	2750		

Table F-3
Column Settling Test Results

Elapsed Time in Hours	Port Height in Feet	Suspended Solids in g/L	Percent of Initial Concentration	Turbidity in NTU	Surface Water Height in Feet	Solids Interface Height in Feet
216	5	2.83	29.45	3175		
216	4.5	3.02	31.50	3465		
216	4	3.25	33.87	3700		
216	3.5	3.28	34.12	3720		
216	3.5	3.43	35.75			
216	3	3.47	36.16	3850		
216	2	3.62	37.75	4100		
216	1	3.84	40.04	4300		
216	1			4430		
288	5.5	2.09	21.75	2310	5.94	0.79
288	5	2.55	26.58	2955		
288	4.5	2.78	29.00	3170		
288	4	2.96	30.79	3325		
288	3.5	3.11	32.41	3595		
288	3	3.19	33.25	3650		
288	2	3.38	35.20	3810		
288	1	3.50	36.50	4045		
360	5.5	0.87	9.08	650	5.66	0.79
360	5	2.22	23.08	2490		
360	4.5	2.51	26.16	2870		
360	4	2.70	28.16	2985		
360	3.5	2.83	29.45	3235		
360	3	2.96	30.83	3355		
360	2	3.15	32.83	3655		
360	1	3.32	34.54	3825		
360	1	3.28	34.20	3860		

g/L = grams per liter
NTU = nephelometer turbidity units

Table F-4
MET Elutriate Chemistry Results

Sample ID:	T4-CM2-Met-T	T4-CM2-Met-D
Lab ID:	K2403058-001	K2403058-002
Date Sampled:	04/23/2004	04/23/2004
Metals (ug/L)		
Arsenic	15.5	2.6
Cadmium	2.05	0.06 U
Chromium	118	3.37
Copper	250	15.9
Lead	178	4.72
Mercury	0.6	0.05 U
Nickel	88.9	2.6
Selenium	4.3 B	1.7 U
Silver	1.96	0.15
Zinc	573	12.8
Semivolatile Organics (ug/L)		
Naphthalene	0.39 UJ	0.39 U
2-Methylnaphthalene	0.39 UJ	0.39 U
1-Methylnaphthalene	0.39 UJ	0.39 U
Biphenyl	0.11 UJ	0.39 U
2,6-Dimethylnaphthalene	0.39 UJ	0.39 U
Acenaphthylene	0.092 J	0.11 J
Acenaphthene	0.096 J	0.43
2,3,5-Trimethylnaphthalene	0.024 J	0.041 J
Fluorene	0.39 J	0.11 J
Phenanthrene	0.27 J	0.39 U
Anthracene	0.047 J	0.39 U
1-Methylphenanthrene	0.39 UJ	0.39 U
Fluoranthene	0.46 J	0.17 J
Pyrene	0.85 J	0.10 J
Benz(a)anthracene	0.11 J	0.39 U
Chrysene	0.17 J	0.39 U
Benzo(b)fluoranthene	0.39 J	0.39 U
Benzo(k)fluoranthene	0.092 J	0.39 U
Benzo(e)pyrene	0.39 J	0.39 U
Benzo(a)pyrene	0.39 J	0.39 U
Perylene	0.064 J	0.39 U
Indeno(1,2,3-cd)pyrene	0.39 UJ	0.39 U
Dibenz(a,h)anthracene	0.39 UJ	0.39 U
Benzo(g,h,i)perylene	0.39 UJ	0.39 U
Dimethyl phthalate	9.6 UJ	9.6 U
Diethyl phthalate	9.6 UJ	9.6 U
Di-n-butyl phthalate	9.6 UJ	9.6 U
Butylbenzyl phthalate	9.6 UJ	9.6 U
Bis(2-ethylhexyl) phthalate	9.6 UJ	9.6 U
Di-n-octyl phthalate	9.6 UJ	9.6 U
Total PAHs (a,b)	2.6 J	0.92
Pesticides (ug/L)		
4,4'-DDE	0.015 J	0.0024 J
4,4'-DDD	0.011 J	0.096 U
4,4'-DDT	0.0072 J	0.096 U
2,4'-DDE	0.0019 J	0.096 U
2,4'-DDD	0.011 J	0.096 U
2,4'-DDT	0.0032 J	0.096 U
Total DDD (a,c)	0.022 J	0.096 U

Table F-4
MET Elutriate Chemistry Results

Sample ID:	T4-CM2-Met-T	T4-CM2-Met-D
Lab ID:	K2403058-001	K2403058-002
Date Sampled:	04/23/2004	04/23/2004
Total DDE (a,d)	0.0169 J	0.0024 J
Total DDT (a,e)	0.0104 J	0.096 U
ΣDDTs (a,f)	0.0493 J	0.0024 J
PCBs (ug/L)		
Aroclor 1016	0.096 U	0.096 U
Aroclor 1221	0.096 U	0.096 U
Aroclor 1232	0.096 U	0.096 U
Aroclor 1242	0.096 U	0.096 U
Aroclor 1248	0.096 U	0.096 U
Aroclor 1254	0.098 U	0.096 U
Aroclor 1260	0.082 J	0.096 U
Aroclor 1262	0.096 U	0.096 U
Aroclor 1268	0.096 U	0.096 U
Total PCBs (a,g)	0.082 J	0.096 U
Conventionals (mg/L)		
Total suspended solids	3300	5 U

U = Analyte was not detected above the reported sample quantitation limit.
J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.
B = Analyte was positvely identified; the associated numerical value is the approximate concentration of the analyte in the sample. The approximate concentration is less than the method report limit but greater than the method detection limit.
T in sample ID indicates a total sample.
D in sample ID indicates a dissolved sample.
a. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
b. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
c. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
d. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
e. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
f. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes c, d, and e for the definitions of total DDD, total DDE, and total DDT, respectively.
g. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).

Table F-5
TCLT Leachate Chemistry Results

Sample ID:	T4-CM2-1	T4-CM2-2	T4 CM2-3	T4CM2-4	T4-CM2-5	T4 CM2-6	T4-CM2-7	T4-CM2-8	T4-CM2-9
Lab ID:	K2402978-006	K2402978-007	K2403293-001	K2403459-001	K2403657-001	K2403768-001	K2403995-001	K2404064-001	K2404308-001
Date Sampled:	04/07/2004	04/20/2004	05/02/2004	05/08/2004	05/14/2004	05/19/2004	05/25/2004	06/01/2004	06/08/2004
Metals (ug/L)									
Arsenic	NA	NA	3.2	NA	NA	2.4	NA	NA	3.8
Cadmium	NA	NA	0.21	NA	NA	0.07	NA	NA	0.11
Chromium	NA	NA	4.3	NA	NA	3.21	NA	NA	3.97
Copper	NA	NA	3.81 J	NA	NA	3.69	NA	NA	6.55
Lead	NA	NA	0.666	NA	NA	1.23	NA	NA	2.5
Mercury	NA	NA	0.2 U	NA	NA	0.2 U	NA	NA	0.2 U
Nickel	NA	NA	7.47	NA	NA	2.93	NA	NA	2.95
Selenium	NA	NA	0.4 B	NA	NA	0.2 B	NA	NA	1 UJ
Silver	NA	NA	0.015 B	NA	NA	0.03	NA	NA	0.057 U
Zinc	NA	NA	3.9	NA	NA	3.2	NA	NA	4.51
Semivolatile Organics (ug/L)									
Naphthalene	0.40 UJ	NA	NA	0.13 J	NA	NA	0.14 J	NA	NA
2-Methylnaphthalene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
1-Methylnaphthalene	0.14 J	NA	NA	0.32 J	NA	NA	0.25 J	NA	NA
Biphenyl	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
2,6-Dimethylnaphthalene	0.40 UJ	NA	NA	0.065 J	NA	NA	0.051 J	NA	NA
Acenaphthylene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Acenaphthene	0.33 J	NA	NA	0.62	NA	NA	0.46 J	NA	NA
2,3,5-Trimethylnaphthalene	0.40 UJ	NA	NA	0.072 J	NA	NA	0.39 UJ	NA	NA
Fluorene	0.40 UJ	NA	NA	0.20 J	NA	NA	0.15 J	NA	NA
Phenanthrene	0.40 UJ	NA	NA	0.28 J	NA	NA	0.22 J	NA	NA
Anthracene	0.40 UJ	NA	NA	0.024 J	NA	NA	0.39 UJ	NA	NA
1-Methylphenanthrene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Fluoranthene	0.40 UJ	NA	NA	0.057 J	NA	NA	0.060 J	NA	NA
Pyrene	0.40 UJ	NA	NA	0.069 J	NA	NA	0.064 J	NA	NA
Benz(a)anthracene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Chrysene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Benzo(b)fluoranthene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Benzo(k)fluoranthene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Benzo(e)pyrene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Benzo(a)pyrene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Perylene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Indeno(1,2,3-cd)pyrene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Dibenz(a,h)anthracene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Benzo(g,h,i)perylene	0.40 UJ	NA	NA	0.40 U	NA	NA	0.39 UJ	NA	NA
Dimethyl phthalate	10 UJ	NA	NA	9.9 U	NA	NA	9.6 UJ	NA	NA
Diethyl phthalate	0.51 J	NA	NA	9.9 U	NA	NA	9.6 UJ	NA	NA
Di-n-butyl phthalate	10 UJ	NA	NA	9.9 U	NA	NA	9.6 UJ	NA	NA

Table F-5
TCLT Leachate Chemistry Results

Sample ID:	T4-CM2-1	T4-CM2-2	T4 CM2-3	T4CM2-4	T4-CM2-5	T4 CM2-6	T4-CM2-7	T4-CM2-8	T4-CM2-9
Lab ID:	K2402978-006	K2402978-007	K2403293-001	K2403459-001	K2403657-001	K2403768-001	K2403995-001	K2404064-001	K2404308-001
Date Sampled:	04/07/2004	04/20/2004	05/02/2004	05/08/2004	05/14/2004	05/19/2004	05/25/2004	06/01/2004	06/08/2004
Butylbenzyl phthalate	10 UJ	NA	NA	9.9 U	NA	NA	9.6 UJ	NA	NA
Bis(2-ethylhexyl) phthalate	10 UJ	NA	NA	9.9 U	NA	NA	9.6 UJ	NA	NA
Di-n-octyl phthalate	10 UJ	NA	NA	9.9 U	NA	NA	9.6 UJ	NA	NA
Total PAHs (a,b)	0.33 J	NA	NA	1.4	NA	NA	1.1 J	NA	NA
Pesticides (ug/L)									
4,4'-DDE	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.0054 J	NA
4,4'-DDD	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
4,4'-DDT	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
2,4'-DDE	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
2,4'-DDD	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
2,4'-DDT	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
Total DDD (a,c)	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
Total DDE (a,d)	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.0054 J	NA
Total DDT (a,e)	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
ΣDDTs (a,f)	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.0054 J	NA
PCBs (ug/L)									
Aroclor 1016	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
Aroclor 1221	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
Aroclor 1232	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
Aroclor 1242	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
Aroclor 1248	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
Aroclor 1254	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
Aroclor 1260	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 UJ	NA
Aroclor 1262	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
Aroclor 1268	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA
Total PCBs (a,g)	NA	0.10 U	NA	NA	0.10 U	NA	NA	0.10 U	NA

Table F-5
TCLT Leachate Chemistry Results

Sample ID:	T4-CM2-10	T4-CM2-11	T4-CM2-12	T4-CM2-13	T4-CM2-14	T4-CM2-15	T4-CM2-16	T4-CM2-17	T4-CM2-18
Lab ID:	K2404410-001	K2404715-001	K2404838-001	K2405086-001	K2405177-001	K2405298-001	K2405510-001	K2405532-001	K2405675-001
Date Sampled:	06/14/2004	06/24/2004	06/30/2004	07/08/2004	07/13/2004	07/19/2004	07/23/2004	07/27/2004	07/27/2004
Metals (ug/L)									
Arsenic	NA	NA	4.1	NA	NA	2.3	NA	NA	2.4
Cadmium	NA	NA	0.11	NA	NA	0.06	NA	NA	0.1
Chromium	NA	NA	4.17	NA	NA	1.85	NA	NA	2.1
Copper	NA	NA	13.3	NA	NA	5.61	NA	NA	6.57
Lead	NA	NA	5.77	NA	NA	2.37	NA	NA	3.02
Mercury	NA	NA	0.2 U	NA	NA	0.2 UJ	NA	NA	0.2 U
Nickel	NA	NA	2.4	NA	NA	0.9 J	NA	NA	1.25
Selenium	NA	NA	1 U	NA	NA	1 U	NA	NA	1 U
Silver	NA	NA	0.09	NA	NA	0.07 U	NA	NA	0.08 U
Zinc	NA	NA	10.2	NA	NA	4	NA	NA	6.2
Semivolatile Organics (ug/L)									
Naphthalene	0.15 J	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
2-Methylnaphthalene	0.066 J	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
1-Methylnaphthalene	0.43	NA	NA	0.43 U	NA	NA	0.12 J	NA	NA
Biphenyl	0.41 U	NA	NA	0.11 J	NA	NA	0.49 U	NA	NA
2,6-Dimethylnaphthalene	0.096 J	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Acenaphthylene	0.41 U	NA	NA	0.43 U	NA	NA	0.049 J	NA	NA
Acenaphthene	0.78	NA	NA	0.43 U	NA	NA	0.39 J	NA	NA
2,3,5-Trimethylnaphthalene	0.077 J	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Fluorene	0.24 J	NA	NA	0.43 U	NA	NA	0.098 J	NA	NA
Phenanthrene	0.29 J	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Anthracene	0.033 J	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
1-Methylphenanthrene	0.41 U	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Fluoranthene	0.41 UJ	NA	NA	0.43 U	NA	NA	0.20 J	NA	NA
Pyrene	0.096 J	NA	NA	0.43 U	NA	NA	0.096 J	NA	NA
Benz(a)anthracene	0.41 U	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Chrysene	0.41 U	NA	NA	0.43 U	NA	NA	0.034 J	NA	NA
Benzo(b)fluoranthene	0.41 U	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Benzo(k)fluoranthene	0.41 U	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Benzo(e)pyrene	0.41 U	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Benzo(a)pyrene	0.41 U	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Perylene	0.41 U	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.41 U	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Dibenz(a,h)anthracene	0.41 U	NA	NA	0.43 U	NA	NA	0.49 UJ	NA	NA
Benzo(g,h,i)perylene	0.41 U	NA	NA	0.43 U	NA	NA	0.49 U	NA	NA
Dimethyl phthalate	11 U	NA	NA	11 U	NA	NA	13 U	NA	NA
Diethyl phthalate	11 U	NA	NA	11 U	NA	NA	13 U	NA	NA
Di-n-butyl phthalate	11 U	NA	NA	11 U	NA	NA	13 U	NA	NA

Table F-5
TCLT Leachate Chemistry Results

Sample ID:	T4-CM2-10	T4-CM2-11	T4-CM2-12	T4-CM2-13	T4-CM2-14	T4-CM2-15	T4-CM2-16	T4-CM2-17	T4-CM2-18
Lab ID:	K2404410-001	K2404715-001	K2404838-001	K2405086-001	K2405177-001	K2405298-001	K2405510-001	K2405532-001	K2405675-001
Date Sampled:	06/14/2004	06/24/2004	06/30/2004	07/08/2004	07/13/2004	07/19/2004	07/23/2004	07/27/2004	07/27/2004
Butylbenzyl phthalate	11 U	NA	NA	11 U	NA	NA	13 U	NA	NA
Bis(2-ethylhexyl) phthalate	11 U	NA	NA	11 U	NA	NA	13 U	NA	NA
Di-n-octyl phthalate	11 U	NA	NA	11 U	NA	NA	13 U	NA	NA
Total PAHs (a,b)	1.6	NA	NA	0.43 U	NA	NA	0.87 J	NA	NA
Pesticides (ug/L)									
4,4'-DDE	NA	0.12 U	NA	NA	0.11 U	NA	NA	0.10 U	NA
4,4'-DDD	NA	0.12 U	NA	NA	0.11 U	NA	NA	0.10 U	NA
4,4'-DDT	NA	0.12 U	NA	NA	0.11 U	NA	NA	0.10 U	NA
2,4'-DDE	NA	0.12 U	NA	NA	0.11 U	NA	NA	0.10 U	NA
2,4'-DDD	NA	0.12 U	NA	NA	0.0013 J	NA	NA	0.00084 J	NA
2,4'-DDT	NA	0.12 U	NA	NA	0.11 U	NA	NA	0.10 U	NA
Total DDD (a,c)	NA	0.12 U	NA	NA	0.0013 J	NA	NA	0.00084 J	NA
Total DDE (a,d)	NA	0.12 U	NA	NA	0.11 U	NA	NA	0.10 U	NA
Total DDT (a,e)	NA	0.12 U	NA	NA	0.11 U	NA	NA	0.10 U	NA
ΣDDTs (a,f)	NA	0.12 U	NA	NA	0.0013 J	NA	NA	0.00084 J	NA
PCBs (ug/L)									
Aroclor 1016	NA	0.12 U	NA	NA	0.22 U	NA	NA	0.10 U	NA
Aroclor 1221	NA	0.12 U	NA	NA	0.43 U	NA	NA	0.10 U	NA
Aroclor 1232	NA	0.12 U	NA	NA	0.22 U	NA	NA	0.10 U	NA
Aroclor 1242	NA	0.12 U	NA	NA	0.22 U	NA	NA	0.10 U	NA
Aroclor 1248	NA	0.12 U	NA	NA	0.22 U	NA	NA	0.10 U	NA
Aroclor 1254	NA	0.12 U	NA	NA	0.22 U	NA	NA	0.10 U	NA
Aroclor 1260	NA	0.12 U	NA	NA	0.22 U	NA	NA	0.10 U	NA
Aroclor 1262	NA	0.12 U	NA	NA	0.22 U	NA	NA	0.10 U	NA
Aroclor 1268	NA	0.12 U	NA	NA	0.22 U	NA	NA	0.10 U	NA
Total PCBs (a,g)	NA	0.12 U	NA	NA	0.43 U	NA	NA	0.10 U	NA

Table F-5
TCLT Leachate Chemistry Results

Sample ID:	T4-CM2-19	T4-CM2-20	T4-CM2-21	T4-CM2-22	T4-CM2-23	T4-CM2-24
Lab ID:	K2405739-001	K2405932-001	K2405932-002	K2406120-001	K2406266-001	K2406359-001
Date Sampled:	08/03/2004	08/06/2004	08/06/2004	08/14/2004	08/18/2004	08/22/2004
Metals (ug/L)						
Arsenic	NA	NA	2.5	NA	NA	2.59
Cadmium	NA	NA	0.13	NA	NA	0.1
Chromium	NA	NA	2.22	NA	NA	2.39
Copper	NA	NA	7.43	NA	NA	6.78
Lead	NA	NA	3.16	NA	NA	2.9
Mercury	NA	NA	0.2 UJ	NA	NA	0.2 U
Nickel	NA	NA	1.36 U	NA	NA	1.52
Selenium	NA	NA	1 U	NA	NA	1 U
Silver	NA	NA	0.08 U	NA	NA	0.051
Zinc	NA	NA	6.3	NA	NA	6.36
Semivolatile Organics (ug/L)						
Naphthalene	0.12 J	NA	NA	0.40 U	NA	NA
2-Methylnaphthalene	0.068 J	NA	NA	0.40 U	NA	NA
1-Methylnaphthalene	0.23 J	NA	NA	0.40 U	NA	NA
Biphenyl	0.40 U	NA	NA	0.40 U	NA	NA
2,6-Dimethylnaphthalene	0.074 J	NA	NA	0.40 U	NA	NA
Acenaphthylene	0.40 U	NA	NA	0.40 U	NA	NA
Acenaphthene	0.50	NA	NA	0.21 J	NA	NA
2,3,5-Trimethylnaphthalene	0.064 J	NA	NA	0.40 U	NA	NA
Fluorene	0.19 J	NA	NA	0.40 U	NA	NA
Phenanthrene	0.36 J	NA	NA	0.40 U	NA	NA
Anthracene	0.40 U	NA	NA	0.40 U	NA	NA
1-Methylphenanthrene	0.40 U	NA	NA	0.40 U	NA	NA
Fluoranthene	0.40 U	NA	NA	0.40 U	NA	NA
Pyrene	0.40 U	NA	NA	0.40 U	NA	NA
Benz(a)anthracene	0.40 U	NA	NA	0.40 U	NA	NA
Chrysene	0.40 U	NA	NA	0.40 U	NA	NA
Benzo(b)fluoranthene	0.40 U	NA	NA	0.40 U	NA	NA
Benzo(k)fluoranthene	0.40 U	NA	NA	0.40 U	NA	NA
Benzo(e)pyrene	0.40 U	NA	NA	0.40 U	NA	NA
Benzo(a)pyrene	0.40 U	NA	NA	0.40 U	NA	NA
Perylene	0.40 U	NA	NA	0.40 U	NA	NA
Indeno(1,2,3-cd)pyrene	0.40 U	NA	NA	0.40 U	NA	NA
Dibenz(a,h)anthracene	0.40 UJ	NA	NA	0.40 U	NA	NA
Benzo(g,h,i)perylene	0.40 U	NA	NA	0.40 U	NA	NA
Dimethyl phthalate	10 U	NA	NA	10 U	NA	NA
Diethyl phthalate	10 U	NA	NA	10 U	NA	NA
Di-n-butyl phthalate	10 U	NA	NA	10 U	NA	NA

Table F-5
TCLT Leachate Chemistry Results

Sample ID:	T4-CM2-19	T4-CM2-20	T4-CM2-21	T4-CM2-22	T4-CM2-23	T4-CM2-24
Lab ID:	K2405739-001	K2405932-001	K2405932-002	K2406120-001	K2406266-001	K2406359-001
Date Sampled:	08/03/2004	08/06/2004	08/06/2004	08/14/2004	08/18/2004	08/22/2004
Butylbenzyl phthalate (ug/L)	10 U	NA	NA	10 U	NA	NA
Bis(2-ethylhexyl) phthalate	10 U	NA	NA	10 U	NA	NA
Di-n-octyl phthalate	3.9 J	NA	NA	10 U	NA	NA
Total PAHs (a,b)	1.2	NA	NA	0.21 J	NA	NA
Pesticides (ug/L)						
4,4'-DDE	NA	0.098 U	NA	NA	0.11 U	NA
4,4'-DDD	NA	0.098 U	NA	NA	0.11 U	NA
4,4'-DDT	NA	0.098 U	NA	NA	0.11 U	NA
2,4'-DDE	NA	0.098 U	NA	NA	0.11 U	NA
2,4'-DDD	NA	0.098 U	NA	NA	0.11 U	NA
2,4'-DDT	NA	0.098 U	NA	NA	0.11 U	NA
Total DDD (a,c)	NA	0.098 U	NA	NA	0.11 U	NA
Total DDE (a,d)	NA	0.098 U	NA	NA	0.11 U	NA
Total DDT (a,e)	NA	0.098 U	NA	NA	0.11 U	NA
ΣDDTs (a,f)	NA	0.098 U	NA	NA	0.11 U	NA
PCBs (ug/L)						
Aroclor 1016	NA	0.20 U	NA	NA	0.11 U	NA
Aroclor 1221	NA	0.39 U	NA	NA	0.11 U	NA
Aroclor 1232	NA	0.20 U	NA	NA	0.11 U	NA
Aroclor 1242	NA	0.20 U	NA	NA	0.11 U	NA
Aroclor 1248	NA	0.20 U	NA	NA	0.11 U	NA
Aroclor 1254	NA	0.20 U	NA	NA	0.11 U	NA
Aroclor 1260	NA	0.20 U	NA	NA	0.11 U	NA
Aroclor 1262	NA	0.20 U	NA	NA	0.11 U	NA
Aroclor 1268	NA	0.20 U	NA	NA	0.11 U	NA
Total PCBs (a,g)	NA	0.39 U	NA	NA	0.11 U	NA

Table F-5
TCLT Leachate Chemistry Results

U = Analyte was not detected above the reported sample quantitation limit.
J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.
B = Analyte was positvely identified; the associated numerical value is the approximate concentration of the analyte in the sample. The approximate concentration is less than the method report limit but greater than the method detection limit.
NA = Compound not analyzed.

a. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
b. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
c. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
d. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
e. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
f. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes c, d, and e for the definitions of total DDD, total DDE, and total DDT, respectively.
g. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).

Table F-6
TCLT Samples Conventionals Results

Sample ID	Pore Volume	pH	Eh (millivolts)	Conductivity (millimhos)	Dissolved Oxygen (ppm)
T4-CM2-1	0.90	6.53	181	151	0.50
T4-CM2-2	1.79	6.51	203	188	0.30
T4-CM2-3	2.69	6.37	165	180	0.70
T4-CM2-4	3.59	7.18	119	134	0.50
T4-CM2-5	4.50	6.55	59	81	0.60
T4-CM2-6	5.41	6.18	103	78	0.40
T4-CM2-7	6.22	6.47	13	78	0.20
T4-CM2-8	7.10	6.11	77	78	0.30
T4-CM2-9	7.98	6.21	135	88	0.40
T4-CM2-10	8.87	6.65	110	92	0.30
T4-CM2-11	10.47	6.32	116	79	0.20
T4-CM2-12	11.31	5.88	120	79	0.50
T4-CM2-13	12.17	6.28	135	64	0.60
T4-CM2-14	13.01	6.31	109	47	0.40
T4-CM2-15	13.92	5.73	118	36	0.50
T4-CM2-16	14.82	5.77	104	40	0.20
T4-CM2-17	15.72	6.13	112	53	0.20
T4-CM2-18	16.47	5.70	116	38	0.30
T4-CM2-19	17.38	5.73	116	41	0.20
T4-CM2-20	18.19	5.96	129	47	0.50
T4-CM2-21	18.85	6.50	103	32	0.50
T4-CM2-22	19.74	6.25	134	66	0.90
T4-CM2-23	20.60	6.53	128	53	0.50
T4-CM2-24	21.45	6.92	144	46	0.40

Table F-7
Sediment Composite Samples Chemistry Results

Sample ID:	T4-CM1	T4-CM2
Lab ID:	K2402055-004	K2401845-007
Date Sampled:	03/19/2004	03/11/2004
Metals (mg/kg)		
Arsenic	3.1	2.5
Cadmium	0.3	0.3
Chromium	19.3 J	16.5
Copper	25.7 J	23 J
Lead	30.1	23.2
Mercury	0.145	0.064
Nickel	21.4	18.3 J
Selenium	0.12 UJ	0.11 U
Silver	0.1	0.13
Zinc	93.6 J	78.5 J
Semivolatile Organics (ug/kg)		
Naphthalene	56	97
2-Methylnaphthalene	18	52
1-Methylnaphthalene	8.5	51
Biphenyl	5.3	11
2,6-Dimethylnaphthalene	12	34
Acenaphthylene	8.9	10
Acenaphthene	48	170
2,3,5-Trimethylnaphthalene	18	28
Fluorene	36	110
Phenanthrene	230	590
Anthracene	42	130
1-Methylphenanthrene	22	47
Fluoranthene	360	910
Pyrene	450	1,100
Benz(a)anthracene	170	580
Chrysene	240	690
Benzo(b)fluoranthene	230	700
Benzo(k)fluoranthene	210	600
Benzo(e)pyrene	190	540
Benzo(a)pyrene	230	750
Perylene	190	300
Indeno(1,2,3-cd)pyrene	180	630
Dibenz(a,h)anthracene	32	130
Benzo(g,h,i)perylene	200	570
Dimethyl phthalate	20 U	20 U
Diethyl phthalate	20 U	20 U
Di-n-butyl phthalate	20 U	20 U
Butylbenzyl phthalate	7.3 J	20 U
Bis(2-ethylhexyl) phthalate	33 U	33
Di-n-octyl phthalate	20 U	20 U
Total PAHs (a,b)	2,311	6,437
Pesticides (ug/kg)		
4,4'-DDE	1.7	2.1
4,4'-DDD	1.4	1.9
4,4'-DDT	2.0	2.5
2,4'-DDE	0.38 U	0.44 U
2,4'-DDD	1.9	1.5
2,4'-DDT	1.3	0.55 J
Total DDD (a,c)	3.3	3.4
Total DDE (a,d)	1.7	2.1
Total DDT (a,e)	3.3	3.1
ΣDDT (a,f)	8.3	8.6
PCBs (ug/kg)		
Aroclor 1016	4.8 U	5.4 U
Aroclor 1221	9.5 U	11 U
Aroclor 1232	4.8 U	5.4 U

Table F-7
Sediment Composite Samples Chemistry Results

Sample ID:	T4-CM1	T4-CM2
Lab ID:	K2402055-004	K2401845-007
Date Sampled:	03/19/2004	03/11/2004
Aroclor 1242	4.8 U	5.4 U
Aroclor 1248	16 J	8.2
Aroclor 1254	41 U	19 U
Aroclor 1260	51	17
Aroclor 1262	4.8 U	5.4 U
Aroclor 1268	4.8 U	5.4 U
Total PCBs (a,g)	67	25
Petroleum Hydrocarbons (mg/kg)		
Diesel Range Organics (DRO)	55 J	62 J
Residual Range Organics (RRO)	120 J	140 J
Gasoline Range Organics (GRO)	3.5 U	3.6 U
Conventionals (percent)		
Total organic carbon	0.56	0.81
Total solids	70.3	70.9
Grain Size (percent) (h)		
Gravel No. 3/4" (19.0 mm)	NA	100
Gravel No. 3/8" (9.50 mm)	NA	100
Gravel, Medium No. 4 (4.75 mm)	NA	100
Gravel, Fine No. 10 (2.00 mm)	NA	99.9
Sand, Very Coarse No. 20 (0.850 mm)	NA	98.6 J
Sand, Coarse No. 40 (0.425 mm)	NA	77.6
Sand, Medium No. 60 (0.250 mm)	NA	51.9
Sand, Fine No. 140 (0.106 mm)	NA	40.7 J
Sand, Very Fine No. 200 (0.0750 mm)	NA	36.8
Silt (0.074 mm)	NA	31.3
Clay (0.005 mm)	NA	10.1
Clay (0.001 mm)	NA	0
Hazardous Waste Characteristics		
Ignitability, degrees F	200 >	200 >
Total Cyanide, mg/kg	0.2 UJ	0.2 UJ
Corrosivity, pH	6.92	7.01 J
Reactive Sulfide, mg/kg	29 U	25 U

Table F-7
Sediment Composite Samples Chemistry Results

U = Analyte was not detected above the reported sample quantitation limit
J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.
B = Analyte was positvely identified; the associated numerical value is the approximate concentration of the analyte in the sample. The approximate concentration is less than the method report limit but greater than the method detection limit.

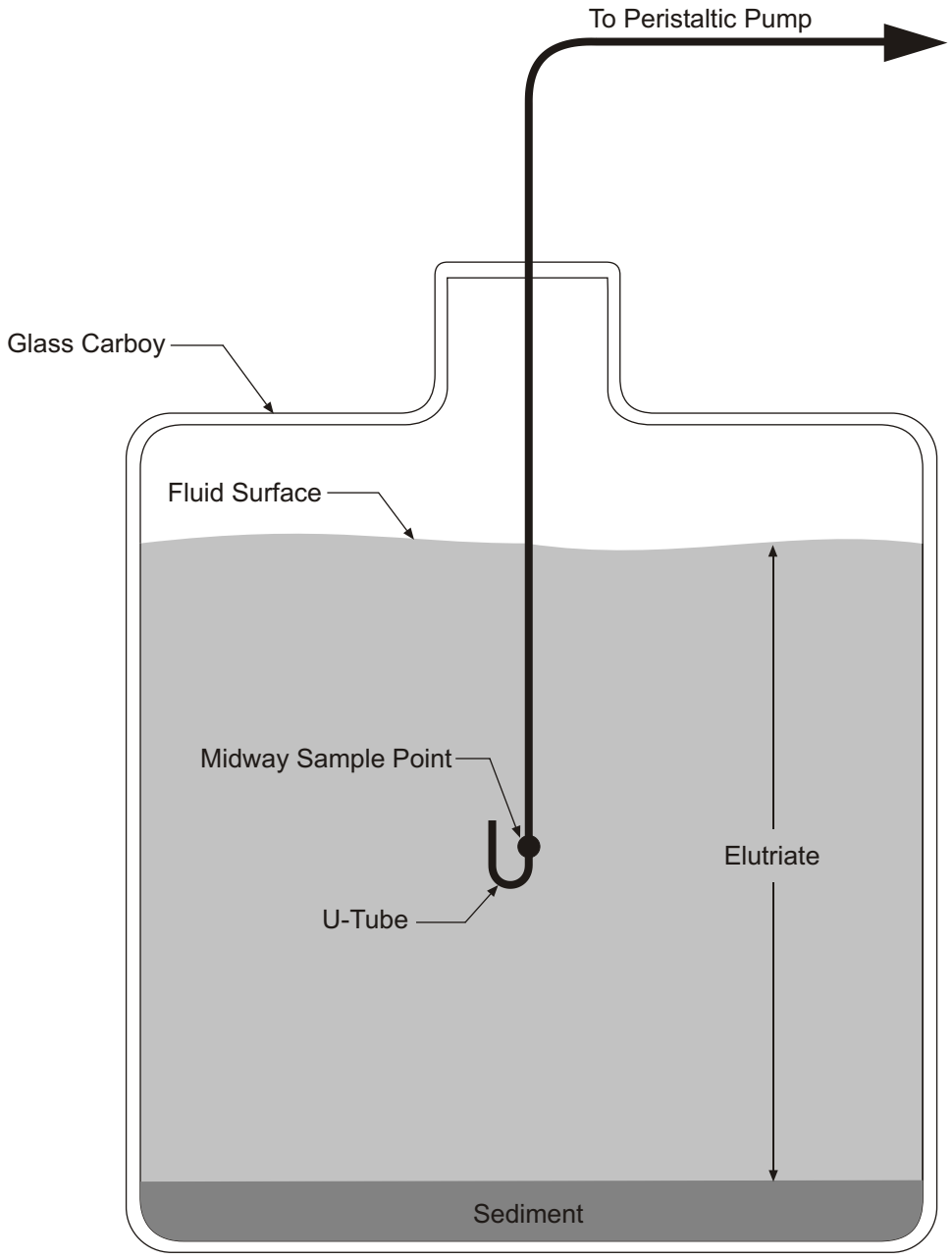
a. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit
b. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene
c. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD
d. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE
e. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
f. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes c, d, and e for the definitions of total DDD, total DDE, and total DDT, respectively.
g. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclo 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268)
h. Grain size analysis was performed by sieve and hydrometer (ASTM D 422). There were occasional calibration discrepancies between the sieves and hydrometer which are inherent in the method. These discrepancies occasionally resulted in an increase in the percent passing fraction between very fine sand and silt. As these discrepancies are inherent in the method, the data are considered acceptable for use

Table F-8
TCLP Results Compared to Hazardous Waste Criteria

Sample ID:		T4-CM1	T4-CM2
Lab ID:	TCLP	K2402055-004	K2401845-007
Date Sampled:	Criteria (a)	03/23/2004	03/11/2004
Metals (mg/L)			
Arsenic	5	0.1 U	0.1 U
Barium	100	0.5 B	1
Cadmium	1	0.01 U	0.01 U
Chromium	5	0.004 B	0.01 U
Lead	5	0.05 U	0.05 U
Selenium	1	0.1 U	0.1 U
Silver	5	0.01 J	0.01 U
Mercury	0.2	0.001 U	0.001 UJ
Pesticides (mg/L)			
gamma-BHC (Lindane)	0.4	0.0005 U	0.0005 U
Heptachlor	0.008	0.0005 U	0.0005 U
Heptachlor Epoxide	0.008	0.0005 U	0.0005 U
Endrin	0.02	0.0005 U	0.0005 U
Methoxychlor	10	0.001 U	0.001 U
Chlordane	0.03	0.005 U	0.005 U
Toxaphene	0.5	0.01 U	0.01 U
Herbicides (ug/L)			
2,4-D	10000	100 U	100 U
2,4,5-TP (Silvex)	1000	20 U	20 U
Volatiles (mg/L)			
Vinyl Chloride	0.2	0.08 U	0.08 U
1,1-Dichloroethene (1,1-DCE)	0.7	0.2 U	0.2 U
2-Butanone (MEK)	200	8 U	8 U
Chloroform	6	0.2 U	0.2 U
Carbon Tetrachloride	0.5	0.2 U	0.2 U
1,2-Dichloroethane (EDC)	0.5	0.2 U	0.2 U
Benzene	0.5	0.2 U	0.2 U
Trichloroethene (TCE)	0.5	0.2 U	0.2 U
Tetrachloroethene (PCE)	0.7	0.2 U	0.2 U
Chlorobenzene	100	0.2 U	0.2 U
1,4-Dichlorobenzene	7.5	0.2 U	0.2 U
Semivolatile Organics (mg/L)			
Pyridine	5	0.5 UJ	0.5 UJ
2-Methylphenol	200	0.1 U	0.1 U
Hexachloroethane	3	0.1 UJ	0.1 U
4-Methylphenol	200	0.1 U	0.1 U
Nitrobenzene	2	0.1 U	0.1 U
Hexachlorobutadiene	0.5	0.1 UJ	0.1 U
2,4,6-Trichlorophenol	2	0.1 U	0.1 U
2,4,5-Trichlorophenol	400	0.1 U	0.1 U
2,4-Dinitrotoluene	0.13	0.1 U	0.1 U
Hexachlorobenzene	0.13	0.1 UJ	0.1 UJ
Pentachlorophenol (PCP)	100	0.25 U	0.25 U

U = Analyte was not detected above the reported sample quantitation limit.
J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.
B = Analyte was positvely identified; the associated numerical value is the approximate concentration of the analyte in the sample. The approximate concentration is less than the method report limit but greater than the method detection limit.

a. Hazardous waste criteria from CFR 40.261.23.



PORT OF PORTLAND
PORTLAND, OREGON

TERMINAL 4 EARLY ACTION
EE/CA REPORT

SCHEMATIC OF DREDGING
ELUTRIATE TEST

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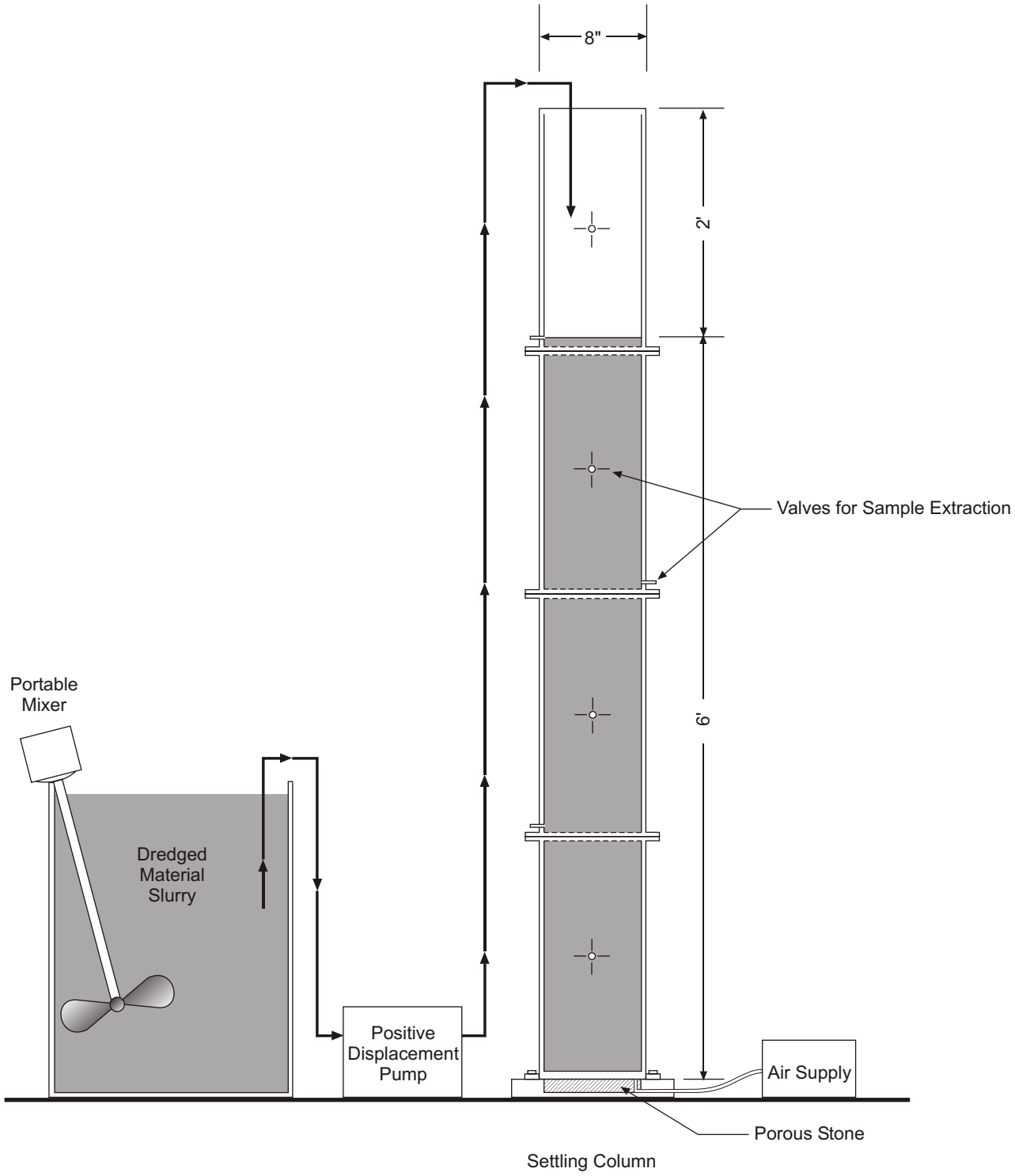
FIGURE
F-1



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TERMINAL 4 EARLY ACTION
EE/CA REPORT

SCHEMATIC OF COLUMN
SETTLING TEST

BBL
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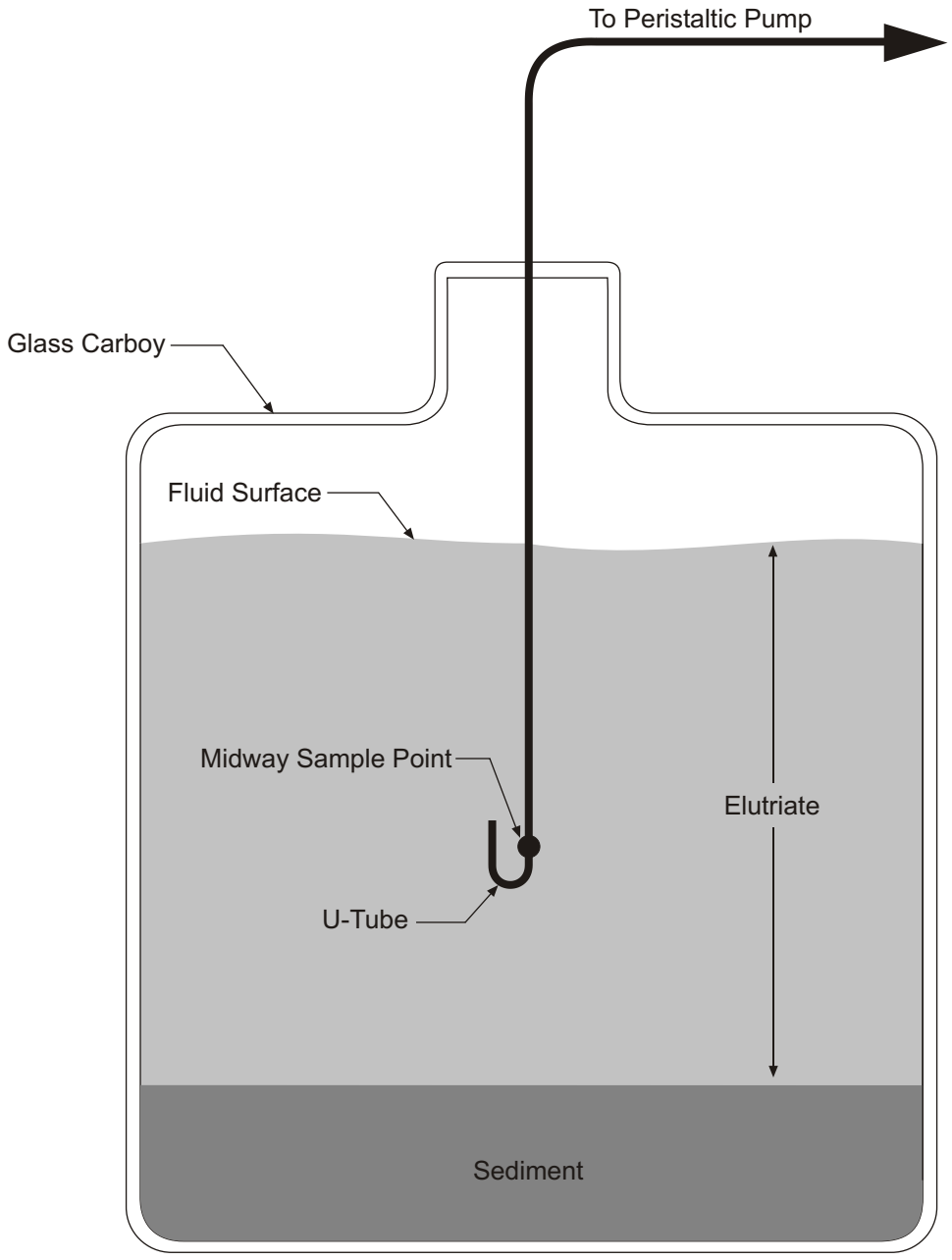
FIGURE
F-2



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EE/CA REPORT

SCHEMATIC OF MODIFIED ELUTRIATE TEST

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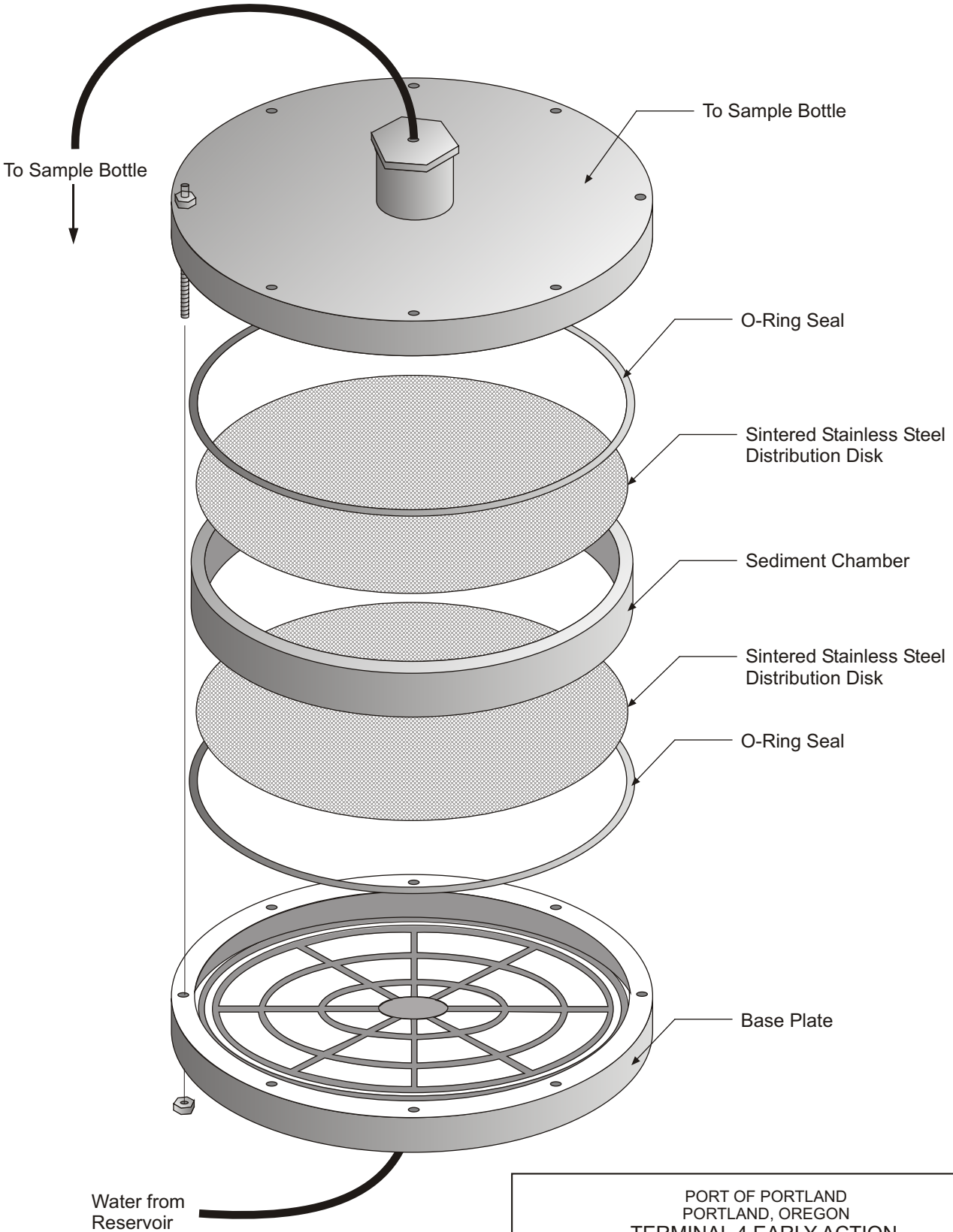
FIGURE
F-3



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TERMINAL 4 EARLY ACTION
EE/CA REPORT

SCHEMATIC OF THIN-LAYER
COLUMN LEACHING TEST

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FIGURE
F-4

Attachment F-1

Laboratory Results and Associated Data Validation Report

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Attachment F-1 – Laboratory Results and Associated Data Validation Report

Appendix F includes electronic copies, in PDF format, of CAS data packages for TCLT data and electronic copies, in PDF format, of EcoChem, Inc. data validation reports on compact disk (CD). CAS files are in the folder "CAS files" and include:

- 03293_CC.pdf which contains data package K2403293;
- 03459_CC.pdf which contains data package K2403459;
- 03657_cc.pdf which contains data package K2403657;
- 03768_cc.pdf which contains data package K2403768;
- 03995_CC.pdf which contains data package K2403995;
- 04064_cc.pdf which contains data package K2404064;
- 04308_CC.pdf which contains data package K2404308;
- 04410_cc.pdf which contains data package K2404410;
- 04715_CC.pdf which contains data package K2404715;
- 04838_CC.pdf which contains data package K2404838;
- 05086_CC.pdf which contains data package K2405086;
- 05177_CC.pdf and 05177rev.pdf which contain data package K2405177;
- 05298_CC.pdf which contains data package K2405298;
- 05510_CC.pdf which contains data package K2405510;
- 05532_cc.pdf which contains data package K2405532;
- 05675_CC.pdf which contains data package K2405675;
- 05739_cc.pdf which contains data package K2405739;
- 05932_CC.pdf which contains data package K2405932;
- 06120_CC.pdf which contains data package K2406120;
- 06266_CC.pdf which contains data package K2406266; and
- 06359_cc.pdf which contains data package K2406359.

EcoChem files are in the folder "EcoChem files" and include:

- POP Terminal4 waterRpt1rev.pdf;
- POP Terminal4 waterRpt2rev.pdf; and
- POP Terminal 4 waterRpt3rev.pdf.